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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,681	12/11/2001	Michael Anthony Klug	M-8577-3D US	4374
33031	7590	11/02/2004	EXAMINER	
CAMPBELL STEPHENSON ASCOLESE, LLP			CURTIS, CRAIG	
4807 SPICEWOOD SPRINGS RD.			ART UNIT	PAPER NUMBER
BLDG. 4, SUITE 201				2872
AUSTIN, TX 78759				

DATE MAILED: 11/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/014,681	KLUG ET AL. <i>PC</i>	
	<b>Examiner</b>	<b>Art Unit</b>	
	Craig Curtis	2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 23 July 2004.  
 2a) This action is FINAL.                    2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 36-41, 57 and 64 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 36-41, 57, and 64 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Disposition of the Instant Application*

- This Office Action is responsive to Applicants' Amendment filed on 23 July 2004, which has been made of record in the file.
- Claims 36-41, 57, and 64 presently are pending in the instant application.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. **Claims 36-38 and 64 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. With regard to claims 36-38 and 64, Applicants have not as yet unambiguously set out in these claims the meaning one should associate with the limitation "matched set." (See claim 36, line 18). While Applicants have set out the meaning of so-called *matched sets* of band-limited diffusers and reference beam masking plates in the specification (p. 29, ll. 27-34 (noting that each page of the specification begins at line 5)—p. 30, ll. 5-9), Applicants are respectfully reminded that although the claims are interpreted in light of the specification, *limitations from the specification are not read into the claims*. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). It is respectfully requested that Applicants consider defining the term *matched set* in the claims (esp. claim 36) in such a manner as to convey that which is generally conveyed in claim 64 (although no association presently**

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exists in claim 64 between the term *matched set* (recited in claim 36; emphasis added) and the replacement scenario set out in claim 64 with respect to the removable band-limited diffuser and the removable masking plate). **With regard to claims 39-41 & 57,** the Examiner cannot ascertain how, precisely, the recited voxel-control lens is capable of varying the size of at least one voxel and of making the rendered image displayed by the object beam unit as seen from the viewpoint of an elemental hologram appear at a greater apparent distance relative to the holographic material (see lines 12-16 in claim 39, lines 9-12 in claim 57). The Examiner understands that one way to accomplish such varying of the sized of at least one voxel and of making the rendered image displayed by the object beam unit as seen from the viewpoint of an elemental hologram appear at a greater apparent distance relative to the holographic material would be to exchange, as required, a lens (even denominating same a voxel-control lens) having a focal length, be it longer or shorter, that is different from that of a voxel-control lens used to create a different-sized voxel. Such replacement of a given voxel-control lens with another voxel-control lens having a different focal length (and, possibly, f/number) therefrom, however, is not captured by reciting, as presently recited in both claim 39 and claim 57, that “the voxel-control lens being capable of varying the size of at least one voxel... (emphasis added).” In other words, a **single** voxel-control lens is in fact **incapable of** so varying the size of at least one voxel, of making the rendered image displayed by the object beam unit...appear at a greater distance relative to the holographic recording material.” Neither is such teaching provided in the specification; voxel-control lenses having various f-numbers (read: f/numbers) are set out in the specification (e.g., p. 19, lines 12-18), but none of these lenses, taken alone, is capable of varying

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the size of..., of making the rendered image...appear at a greater distance relative to the holographic recording medium. **Appear at a greater distance relative to the holographic recording material than what?** The only answer to this question is, at a greater distance relative to the holographic recording material than that produced by a *different* voxel-control lens.

## ***Claim Rejections - 35 USC 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

### **2. Claim 57 is rejected under 35 U.S.C. 102(e) as being anticipated by Kihara et al. (US 5,949,559).**

Kihara et al. disclose a method (see ABSTRACT, entire document) comprising the steps of selecting an elemental hologram (see, e.g., Figs. 3A & 3B); generating a coherent light beam (from laser 31); splitting the beam into an object beam and a reference beam (see 33); rendering an image (see 41); conditioning the object beam with the rendered image (see, e.g., col. 5, ll. 29-47), the conditioning of the object beam including the step of passing the object beam through a voxel-control lens (43), the voxel-control lens being capable of varying the size of at least one voxel (in

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the same manner as that taught by the instant invention) and being capable of making the rendered image as seen from the viewpoint of an elemental hologram appear at a greater apparent distance relative to the holographic recording material (as would obtain in the event that a different voxel-control lens were to be used); and

interfering the conditioned object beam with the reference beam at the selected elemental hologram. See Figs. 3A & 3B.

### ***Claim Rejections - 35 USC 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

#### **3. Claims 36-41 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara et al. (US 5,949,559).**

With regard to claims 36-38, Kihara et al. disclose the invention as claimed--an apparatus and method for printing holographic stereograms, comprising, inter alia:

a light source that produces a coherent beam (31);

a beam splitter (33) that splits the combined beam into an object beam and a reference beam;

a band-limited diffuser (42), wherein said band-limited diffuser includes a deterministic phase pattern designed to diffuse light in at least one of a specific pattern and a specific direction

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(The Examiner asserts that Kihara et al. meet Applicants' *band-limited diffuser* teaching, inasmuch as diffuser 42 of Kihara et al. not only has a deterministic phase pattern designed to diffuse light in a specific pattern—the same, incidentally, could be said about virtually *any* diffuser; that is, that diffusers are *designed* (which goes to deterministic) to diffuse light, and a specific pattern can reasonably be taken to be, for the sake of example, diffusion into  $\pi$ -steradians of solid angle, i.e., hemispherical diffusion; in the alternative, the band-limited diffuser 42 taught by Kihara et al. certainly can reasonably be viewed as having been designed to diffuse light in a specific direction, at least one such specific direction being along the optical axis of the diffuser—which, incidentally, does not preclude diffusion in other directions; and finally, the diffuser taught by Kihara et al. obviously adequately transmits coherent source light, and was presumably selected, if not specifically designed, for this reason.);

a holographic recording material (30);

an object beam unit (see Figs. 3A &3B) including a diffuser (42, 45) for displaying a rendered image and for conditioning the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram (see Fig. 4);

a masking plate (44) proximate to the holographic recording material;

a voxel-control lens (43; see comments made above regarding such voxel-control lens recitations) located in the path of the object beam and proximate to the holographic recording material, said voxel-control lens being capable of varying the size of at least one voxel and being capable of making the rendered image displayed by the object beam unit as seen from the

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viewpoint of an elemental hologram appear at a greater apparent distance relative to the holographic recording material;

wherein the object beam unit includes a SLM (41) for displaying the rendered image and the voxel-control lens has a focal length about equal to the distance between the voxel-control lens and the SLM--**EXCEPT FOR** explicit teachings of the following claimed limitations:

wherein said masking plate is located in the path of the reference beam;

wherein said diffuser for displaying a rendered image and for conditioning the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram is removable;

wherein said masking plate located in the path of the reference beam and proximate to the holographic recording material is removable;

wherein said removable masking plate has at least one positioning adjustment device; and

wherein removable band-limited diffuser has at least one positioning adjustment device.

With regard to said diffuser for displaying a rendered image and for conditioning the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram being both band-limited and removable, it is noted that, strictly speaking, said diffuser taught by Kihara et al. is (as set forth hereinbefore) band-limited.

It would have been obvious to one having ordinary skill in the holographic art at the time the invention was made to have modified the invention of Kihara et al. such that said diffuser be removable, such teaching being notoriously old and well-known in the holographic/optical

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system art, for at least the reason of allowing one to position said diffuser easily and variously within said system in order to achieve a desired diffusion effect.

With regard to the removability of said masking plate, it is asserted that it would have been obvious to one having ordinary skill in the holographic art at the time the invention was made to have modified the invention of Kihara et al. such that said masking plate be removable, such teaching being notoriously old and well-known in the holographic/optical system art, for at least the reason of allowing one to position said masking plate easily and variously within said system in order to achieve a desired masking effect.

**With regard to claim 64,** it is noted that each of the removable band-limited diffuser and the removable masking plate of Kihara et al. are located in respective positions such that the removable band-limited diffuser can be replaced with a second band-limited diffuser (cf. diffusers 42 & 45), and the removable masking plate could be replaced with a second removable masking plate, wherein the second band-limited diffuser and the second removable masking plate allow recording at least one of a larger elemental hologram, a smaller elemental hologram and a differently shaped elemental hologram.

## ***Response to Arguments***

4. Applicants' arguments with respect to claims 36-41, 57, and 64 have been considered but have not been found persuasive. Please refer to the specific comments directed to Applicants' arguments in the rejection of the claims presented hereinbefore.

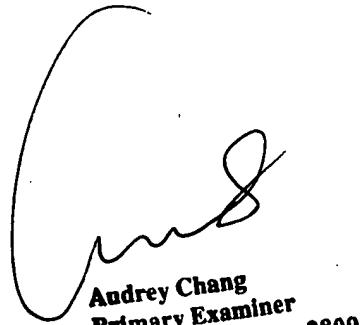
## ***Contact Information***

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Craig H. Curtis, whose telephone number is (703) 305-0776. The examiner can normally be reached on 9 AM to 6 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew A. Dunn, can be reached at (571) 272-2312. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Craig H. Curtis  
Group Art Unit 2872  
22 October 2004



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